FIG. 1

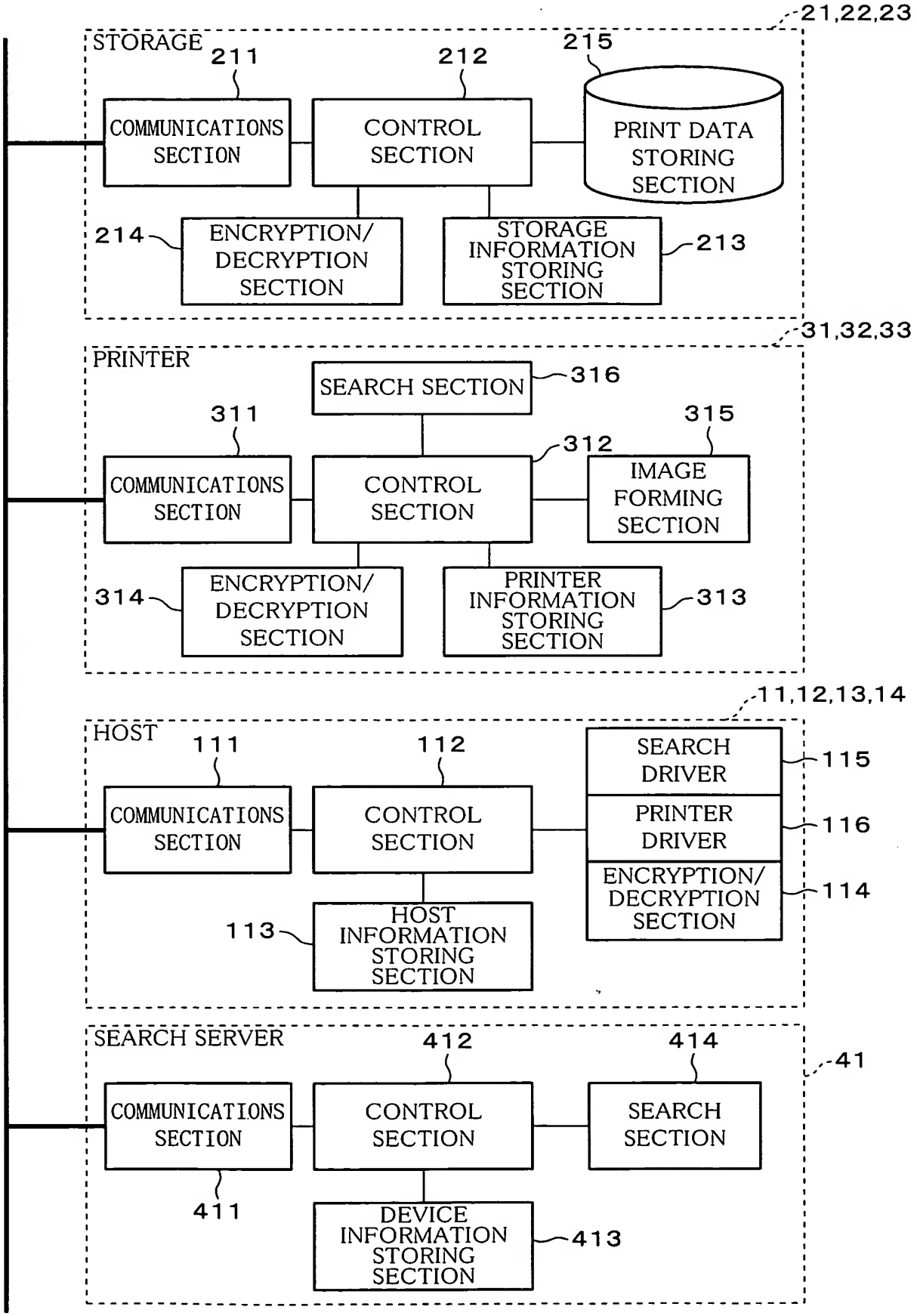

21,22,23
STORAGE
211
212
215
COMMUNICATIONS SECTION
CONTROL SECTION
PRINT DATA STORING SECTION
214
ENCRYPTION/ DECRYPTION SECTION
STORAGE INFORMATION STORING SECTION
213
31,32,33
PRINTER
SEARCH SECTION
316
311
315
312
COMMUNICATIONS SECTION
CONTROL SECTION
IMAGE FORMING SECTION
314
ENCRYPTION/ DECRYPTION SECTION
PRINTER INFORMATION STORING SECTION
313
11,12,13,14
HOST
111
112
SEARCH DRIVER
115
COMMUNICATIONS SECTION
CONTROL SECTION
PRINTER DRIVER
116
ENCRYPTION/ DECRYPTION SECTION
114
113
HOST INFORMATION STORING SECTION
SEARCH SERVER
412
414
41
COMMUNICATIONS SECTION
CONTROL SECTION
SEARCH SECTION
411
DEVICE INFORMATION STORING SECTION
413

FIG. 2

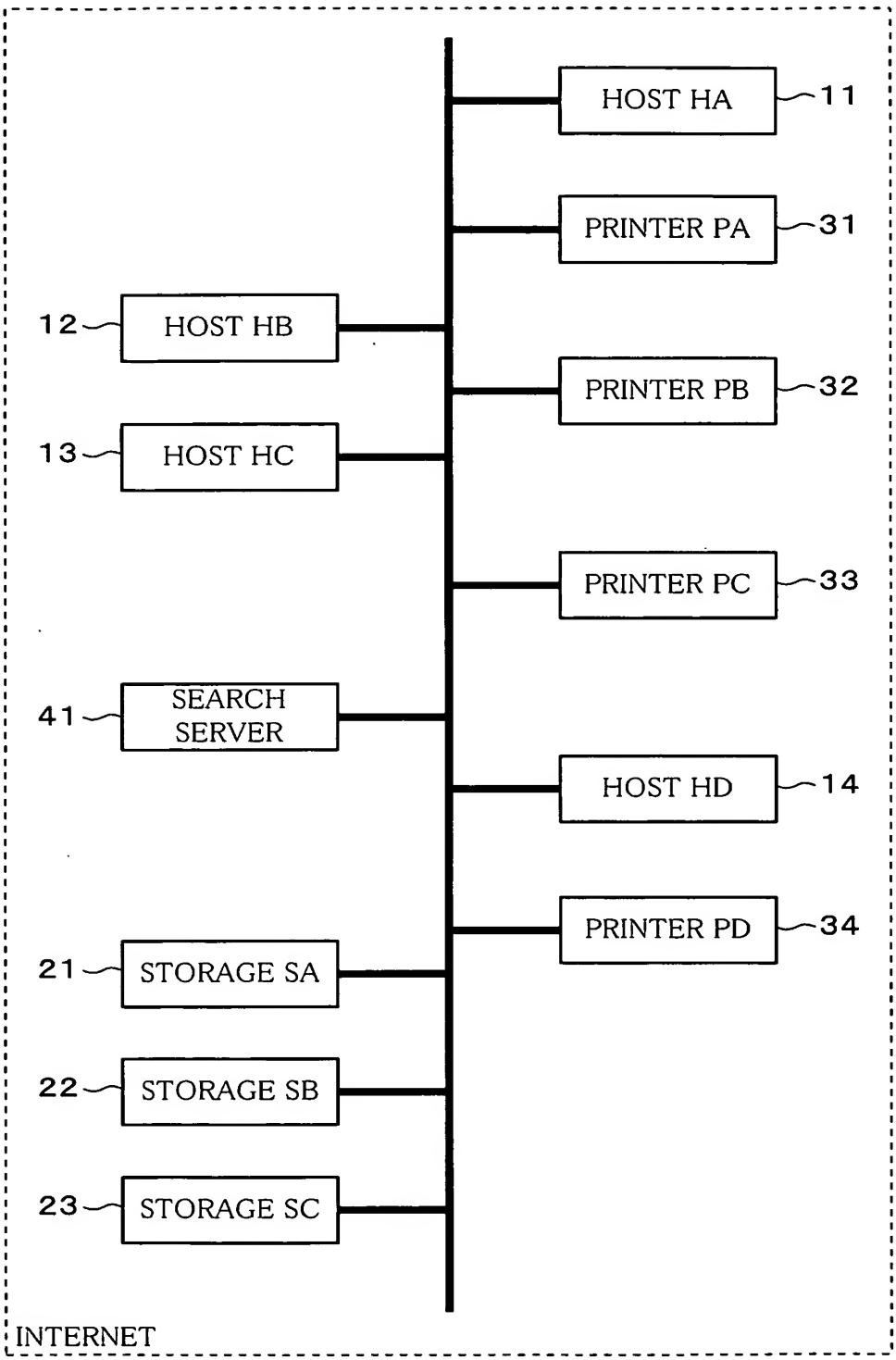

HOST HA
11
PRINTER PA
31
12
HOST HB
PRINTER PB
32
13
HOST HC
PRINTER PC
33
41
SEARCH SERVER
HOST HD
14
PRINTER PD
34
21
STORAGE SA
22
STORAGE SB
23
STORAGE SC
INTERNET

FIG. 3 (a) STORAGE INFORMATION STORING SECTION

STORAGE NAME	STORAGE FEE	DATA PROTECTION FUNCTION (LEVEL)	
STORAGE SA	200 YEN	ONLY ENCRYPTION PROTOCOL 2.0 ENCRYPTION STORAGE, BACKUP FUNCTION	HIGH (TOP SECRET)
STORAGE SB	100 YEN	ONLY ENCRYPTION PROTOCOL 1.0	MEDIUM
STORAGE SC	FREE	—	LOW

FIG. 3 (b) PRINTER INFORMATION STORING SECTION

PRINTER NAME	DATA PROTECTION FUNCTION (LEVEL)		LOCATION	PRINTER FUNCTION
PRINTER PA	ENCRYPTION PROTOCOL 2.0 ENCRYPTION PROTOCOL 1.0 DECRYPTION FUNCTION	TOP SECRET	CONVENIENCE STORE A	COLOR PRINTING, DOUBLE-SIDED PRINTING
PRINTER PB	ENCRYPTION PROTOCOL 2.0 ENCRYPTION PROTOCOL 1.0	HIGH	CONVENIENCE STORE B	DOUBLE-SIDED PRINTING, STAPLING
PRINTER PC	ENCRYPTION PROTOCOL 1.0	MEDIUM	CONVENIENCE STORE C	COLOR PRINTING, DOUBLE-SIDED PRINTING, STAPLING
PRINTER PD	—	LOW	CONVENIENCE STORE D	DOUBLE-SIDED PRINTING, STAPLING

FIG. 3 (c) HOST INFORMATION STORING SECTION

HOST NAME	DATA PROTECTION FUNCTION
HOST HA	ENCRYPTION PROTOCOL 2.0 ENCRYPTION PROTOCOL 1.0
HOST HB	ENCRYPTION PROTOCOL 2.0 ENCRYPTION PROTOCOL 1.0
HOST HC	ENCRYPTION PROTOCOL 2.0 ENCRYPTION PROTOCOL 1.0
HOST HD	ENCRYPTION PROTOCOL 2.0 ENCRYPTION PROTOCOL 1.0

FIG. 3 (d) DEVICE INFORMATION STORING SECTION

STORAGE NAME	AVAILABLE PRINTER	SECURITY LEVEL
STORAGE SA	PA	TOP SECRET
STORAGE SA	PB	HIGH
STORAGE SB	PA、PB、PC	MEDIUM
STORAGE SC	PA、PB、PC、PD	LOW

FIG. 4 (a) SECURITY LEVEL:HIGH

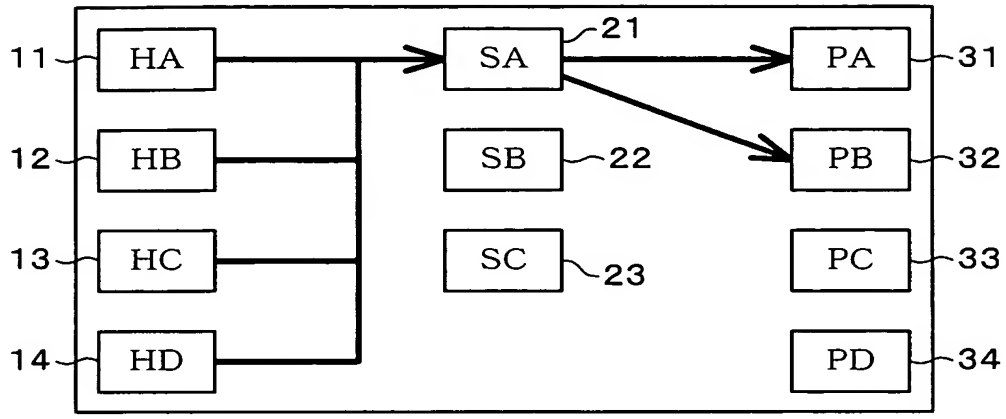


FIG. 4 (b) SECURITY LEVEL:MEDIUM

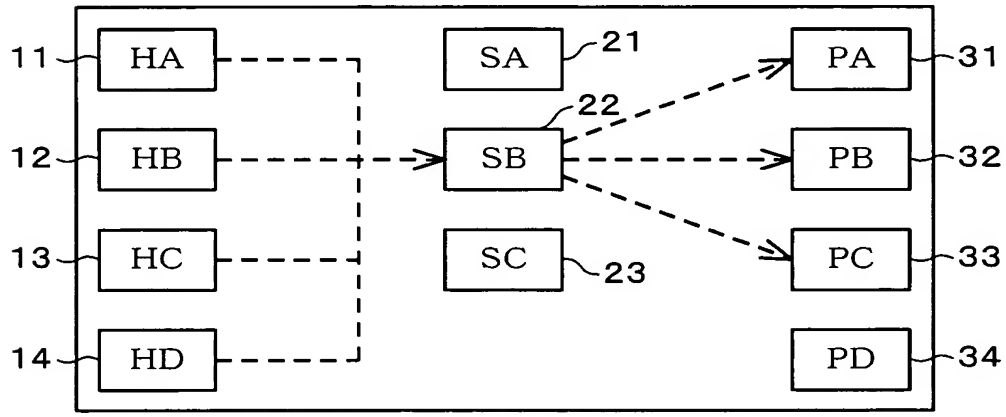


FIG. 4 (c) SECURITY LEVEL:LOW

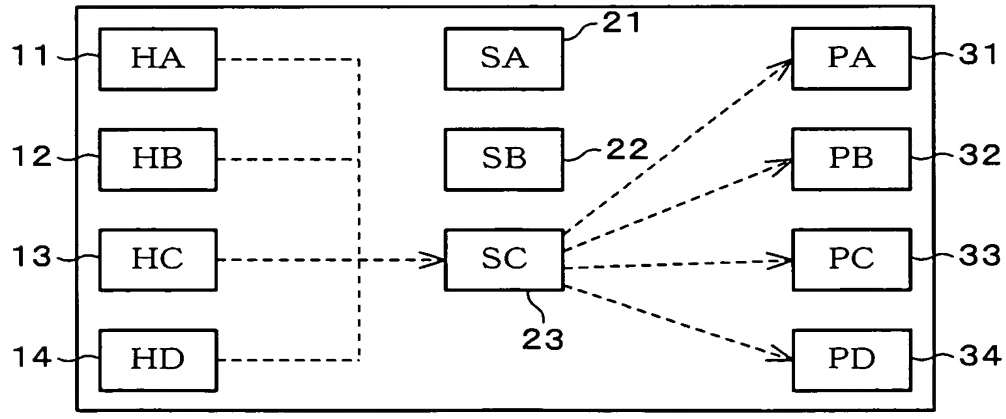


FIG. 5

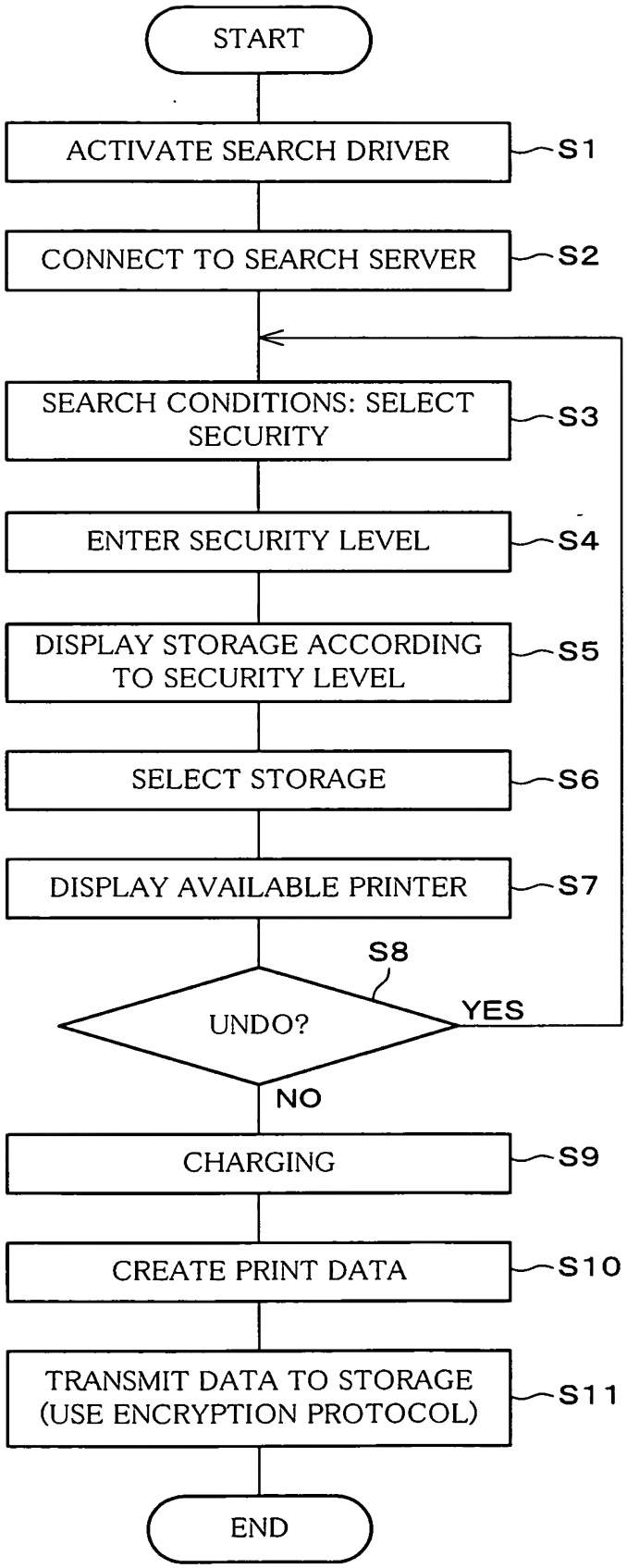

START
ACTIVATE SEARCH DRIVER
S1
CONNECT TO SEARCH SERVER
S2
SEARCH CONDITIONS: SELECT SECURITY
S3
ENTER SECURITY LEVEL
S4
DISPLAY STORAGE ACCORDING TO SECURITY LEVEL
S5
SELECT STORAGE
S6
DISPLAY AVAILABLE PRINTER
S7
S8
UNDO?
YES
NO
CHARGING
S9
CREATE PRINT DATA
S10
TRANSMIT DATA TO STORAGE (USE ENCRYPTION PROTOCOL)
S11
END

FIG. 6 (a)

SELECT A SEARCH CATOGORY

PRINTER | STORAGE | SECURITY

FIG. 6 (b)

SELECT A SECURITY LEVEL

HIGH | MEDIUM | LOW

FIG. 6 (c)

SECURITY LEVEL:HIGH

STORAGE SEARCHED

SELECT A STORAGE. AVAILABLE PRINTER WILL BE SEARCHED

	STORAGE NAME	FEE
1	STORAGE SA	200 YEN
2	STORAGE SD	150 YEN
3	STORAGE SG	200 YEN

NARROW DOWN STORAGES

PRINTER CONDITIONS

FIG. 6 (d)

SECURITY LEVEL:HIGH

PRINT LOCATION : NARA PREFECTURE

PRINT JOB AVAILABLE FROM THE PRINTERS BELOW

	PRINTER NAME	LOCATION	PRINTER FUNCTION
STORAGE SA	PRINTER PA	CONVENIENCE STORE A	COLOR PRINTING, DOUBLE-SIDED PRINTING
	PRINTER PB	CONVENIENCE STORE B	DOUBLE-SIDED PRINTING, STAPLING

OK | RETURN | START OVER

FIG. 7

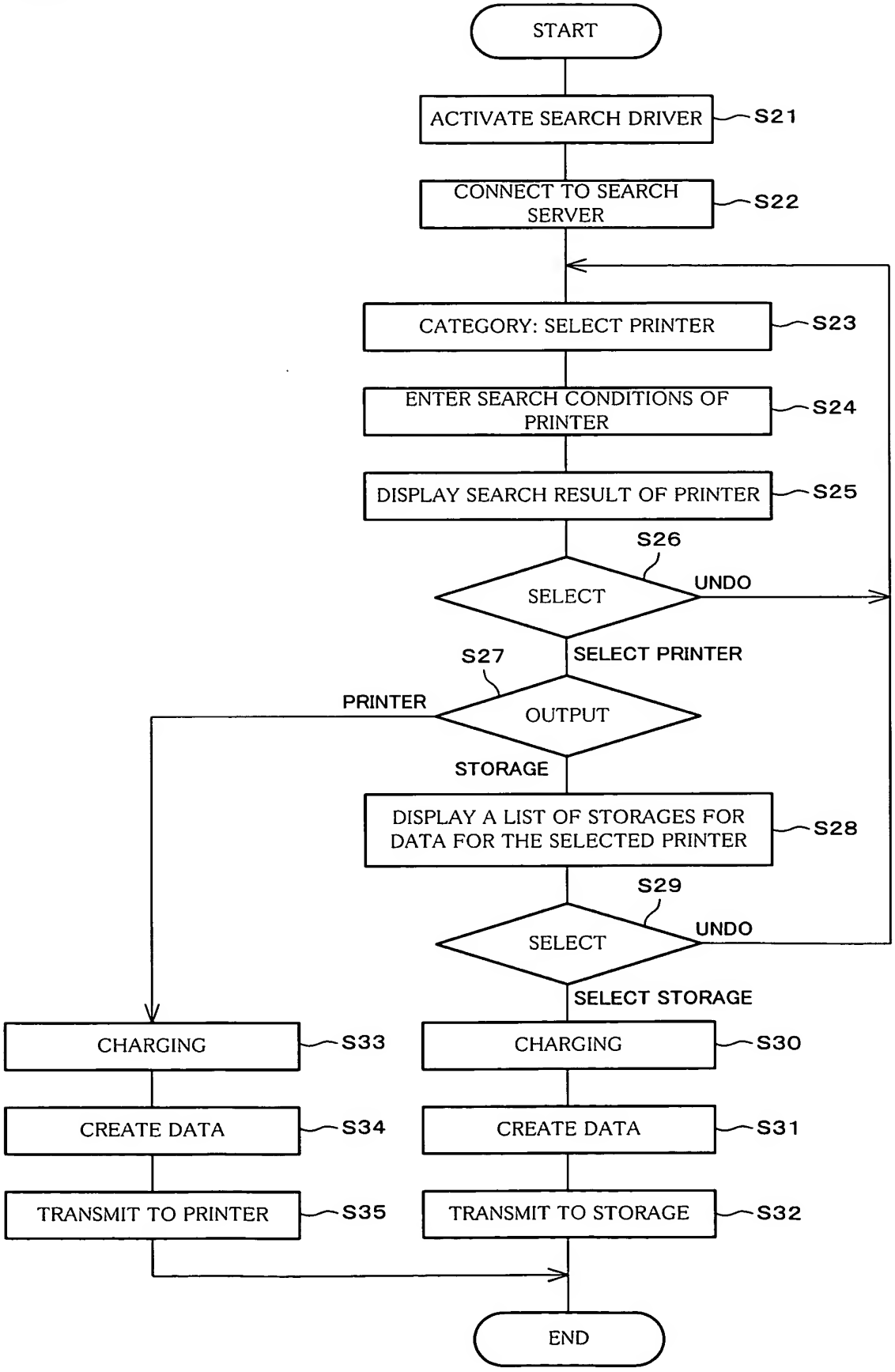

START
ACTIVATE SEARCH DRIVER
S21
CONNECT TO SEARCH SERVER
S22
CATEGORY: SELECT PRINTER
S23
ENTER SEARCH CONDITIONS OF PRINTER
S24
DISPLAY SEARCH RESULT OF PRINTER
S25
S26
SELECT
UNDO
SELECT PRINTER
S27
OUTPUT
PRINTER
STORAGE
DISPLAY A LIST OF STORAGES FOR DATA FOR THE SELECTED PRINTER
S28
S29
SELECT
UNDO
SELECT STORAGE
CHARGING
S33
CREATE DATA
S34
TRANSMIT TO PRINTER
S35
CHARGING
S30
CREATE DATA
S31
TRANSMIT TO STORAGE
S32
END

FIG. 8 (a)

SELECT A SEARCH CATOGORY

PRINTER | STORAGE | SECURITY

FIG. 8 (b)

SELECT A SEARCH CONDITION

ADDRESS | FUNCTION | LIST

FIG. 8 (c)

ADDRESS: NARA PREFECTURE

PRINTER SEARCHED

SELECT A PRINTER. STORAGE CONTANING PRINT DATA FOR THE PRINTER WILL BE SEARCHED

	PRINTER NAME	LOCATION	PRINTER FUNCTION	SECURITY
1	PRINTER PA	CONVENIENCE STORE A	COLOR PRINTING, DOUBLE-SIDED PRINTING	TOP SECRET · HIGH · MEDIUM · LOW
2	PRINTER PB	CONVENIENCE STORE B	DOUBLE-SIDED PRINTING, STAPLING	HIGH · MEDIUM · LOW
3	PRINTER PC	CONVENIENCE STORE C	COLOR PRINTING, DOUBLE-SIDED PRINTING , STAPLING	MEDIUM · LOW
4	PRINTER PD	CONVENIENCE STORE D	DOUBLE-SIDED PRINTING, STAPLING	LOW

DIRECTLY OUTPUT TO PRINTER | OUTPUT TO STORAGE | RETURN | START OVER

FIG. 8 (d)

AVAILABLE SOTRAGES TO PRINTER PA

SELECT A STORAGE

	STORAGE NAME	SECURITY LEVEL	FEE
1	STORAGE SA	HIGH (TOP SECRET)	200 YEN
2	STORAGE SB	MEDIUM	100 YEN
3	STORAGE SC	LOW	FREE

OK | RETURN | START OVER

FIG. 9

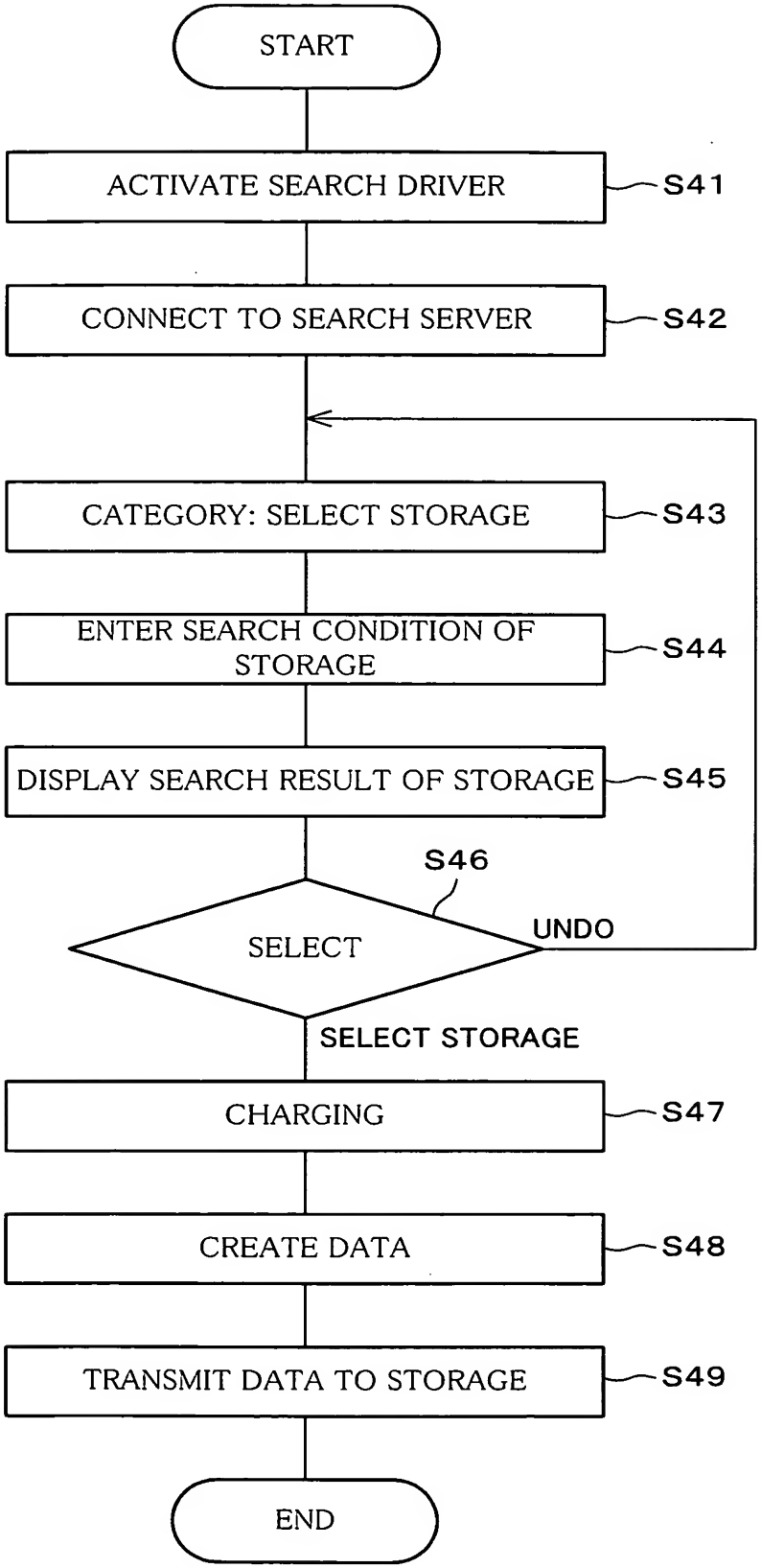

START
ACTIVATE SEARCH DRIVER
S41
CONNECT TO SEARCH SERVER
S42
CATEGORY: SELECT STORAGE
S43
ENTER SEARCH CONDITION OF STORAGE
S44
DISPLAY SEARCH RESULT OF STORAGE
S45
S46
SELECT
UNDO
SELECT STORAGE
CHARGING
S47
CREATE DATA
S48
TRANSMIT DATA TO STORAGE
S49
END

FIG. 10 (a)

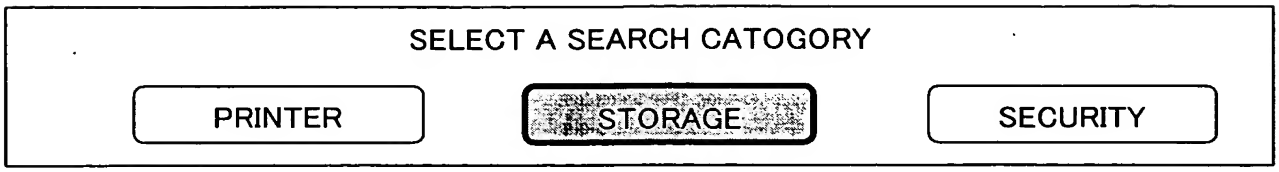


FIG. 10 (b)

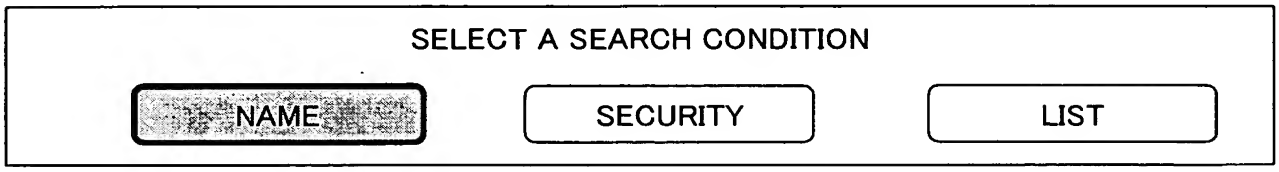


FIG. 10 (c)

STORAGE SC SEARCHED

	STORAGE NAME	AVAILABLE PRINTERS	SECURITY	FEE
1	STORAGE SC	PRINTER PA PRINTER PB PRINTER PC PRINTER PD	LOW	FREE

SECURITY LEVEL IS LOW

STORAGE WITH HIGH SECURITY LEVEL IS RECOMMENDED FOR HIGHLY SECRET DATA

OK | RETURN | START OVER | DETAILS OF PRINTER

FIG. 10 (d)

STORAGE SA SEARCHED

	STORAGE NAME	AVAILABLE PRINTERS	SECURITY	FEE
1	STORAGE SA	PRINTER PA	TOP SECRET	200 YEN
		PRINTER PB	HIGH	

OK | RETURN | START OVER | DETAILS OF PRINTER

FIG. 11

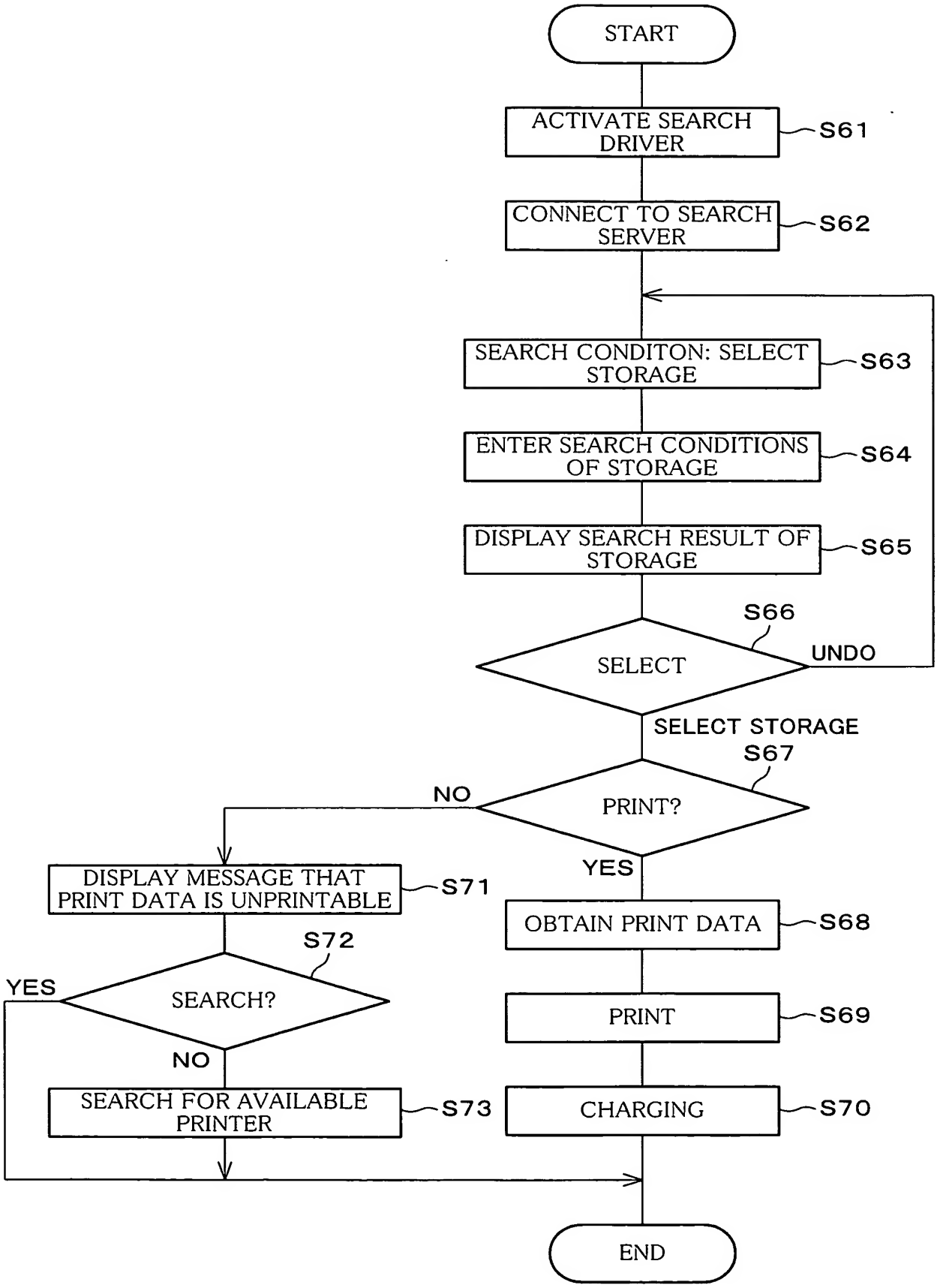

START
ACTIVATE SEARCH DRIVER
S61
CONNECT TO SEARCH SERVER
S62
SEARCH CONDITON: SELECT STORAGE
S63
ENTER SEARCH CONDITIONS OF STORAGE
S64
DISPLAY SEARCH RESULT OF STORAGE
S65
S66
SELECT
UNDO
SELECT STORAGE
S67
PRINT?
NO
YES
DISPLAY MESSAGE THAT PRINT DATA IS UNPRINTABLE
S71
OBTAIN PRINT DATA
S68
S72
SEARCH?
YES
PRINT
S69
NO
SEARCH FOR AVAILABLE PRINTER
S73
CHARGING
S70
END

FIG. 12

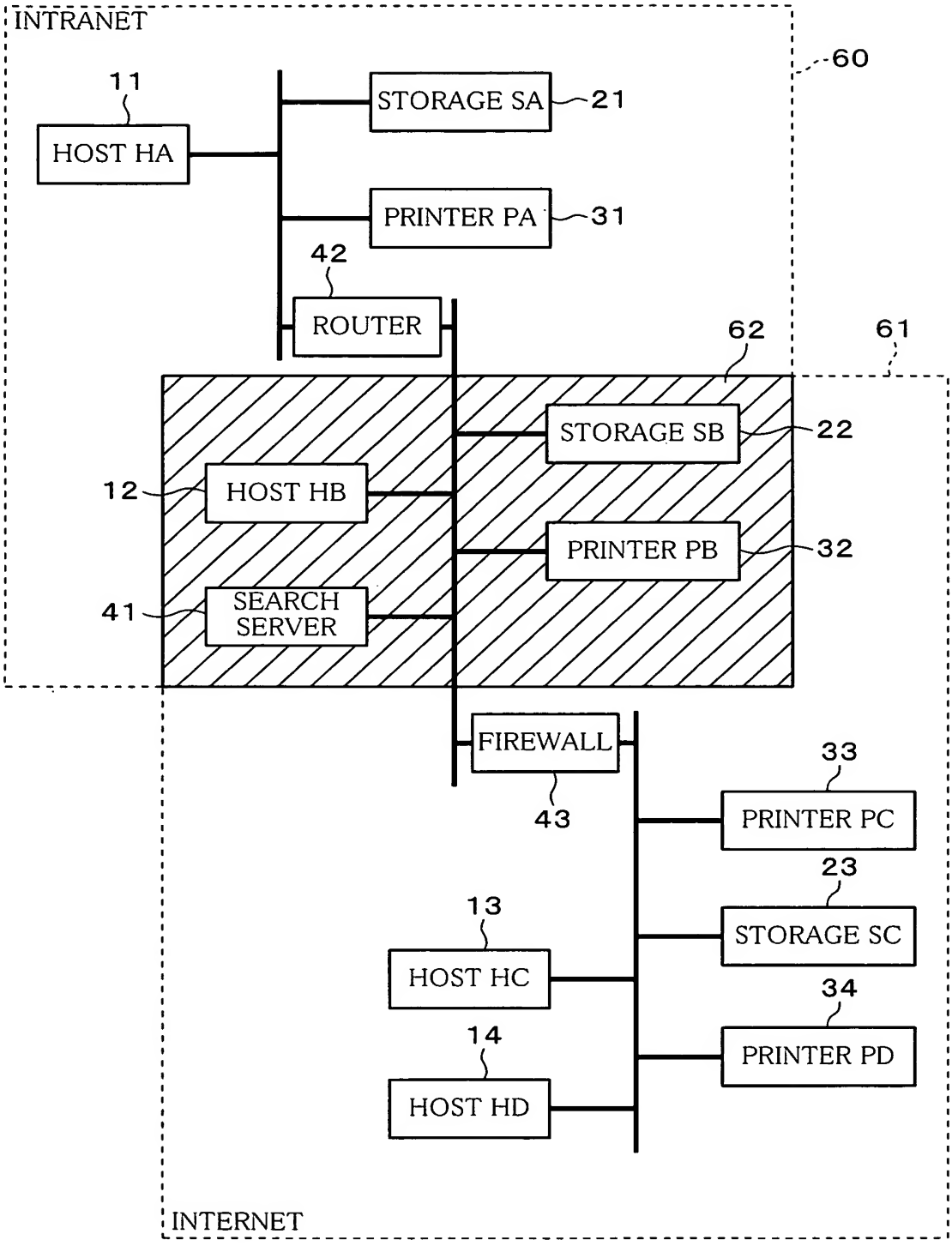

INTRANET
60
11
HOST HA
STORAGE SA
21
PRINTER PA
31
42
ROUTER
62
61
STORAGE SB
22
12
HOST HB
PRINTER PB
32
41
SEARCH SERVER
FIREWALL
43
33
PRINTER PC
23
STORAGE SC
13
HOST HC
34
PRINTER PD
14
HOST HD
INTERNET

FIG. 13 (a) HOST INFORMATION STORING SECTION

HOST NAME	AVAILABLE STORAGE	LOCATION
HOST HA	INTRANET	COMPANY A HEADQUARTERS
HOST HB	INTRANET INTERNET	COMPANY A TOKYO BRANCH
HOST HC	INTERNET STORAGE SB	INTERNET A
HOST HD	INTERNET	INTERNET B

FIG. 13 (b) PRINTER INFORMATION STORING SECTION

PRINTER NAME	AVAILABLE STORAGE	LOCATION	FUNCITON
PRINTER PA	INTRANET	COMPANY A HEADQUARTERS	COLOR PRINTING, DOUBLE-SIDED PRINTING
PRINTER PB	INTRANET INTERNET	COMPANY A TOKYO BRANCH	DOUBLE-SIDED PRINTING, STAPLING
PRINTER PC	INTERNET STORAGE SB	CONVENIENCE STORE A	COLOR PRINTING, DOUBLE-SIDED PRINTING, STAPLING
PRINTER PD	INTERNET	CONVENIENCE STORE B	COLOR PRINTING

FIG. 13 (c) STORAGE INFORMATION STORING SECTION

STORAGE NAME	AVAILABLE HOST	AVAILABLE PRINTER	LOCATION
STORAGE SA	INTRANET	INTRANET	COMPANY A HEADQUARTERS
STORAGE SB	INTRANET HOST HC	INTRANET PRINTER PC	COMPANY A TOKYO BRANCH
STORAGE SC	INTERNET	INTERNET	INTERNET A

FIG. 13 (d) DEVICE INFORMATION STORING SECTION

STORAGE NAME	AVAILABLE HOST	AVAILABLE PRINTER	SECURITY LEVEL
STORAGE SA	HA、HB	PA、PB	HIGH
STORAGE SB	HA、HB、HC	PA、PB、PC	MEDIUM
STORAGE SC	HB、HC、HD	PC、PD	LOW

FIG. 14 (a)

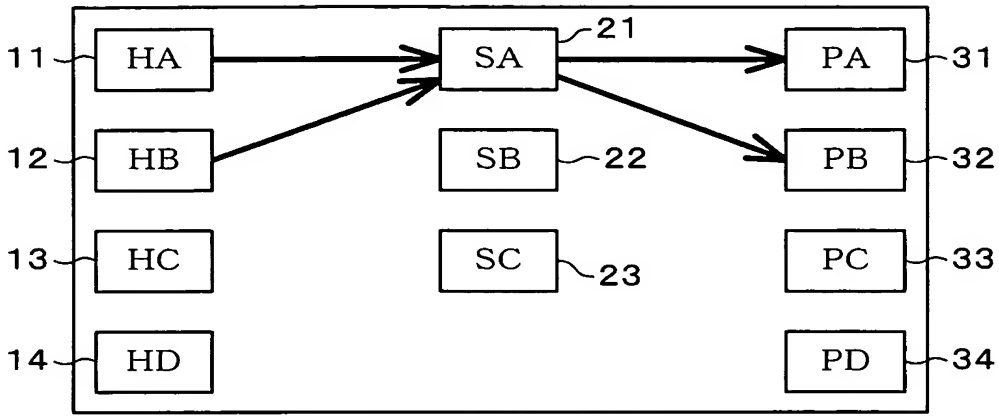


FIG. 14 (b)

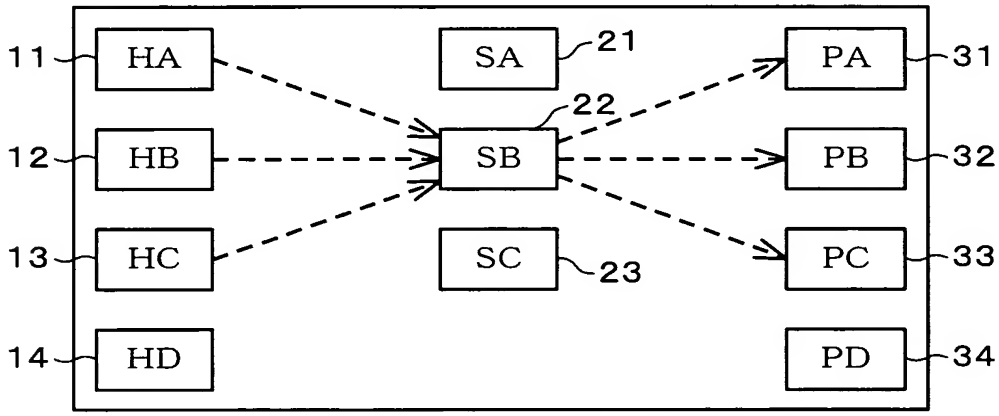


FIG. 14 (c)

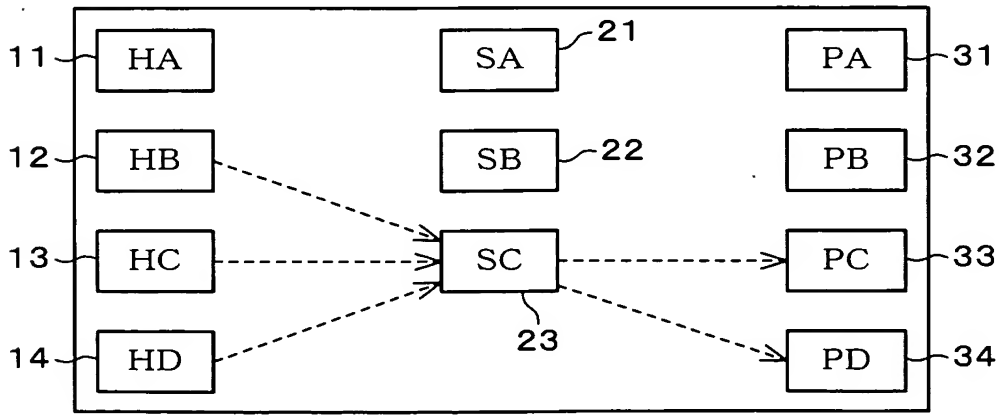


FIG. 15

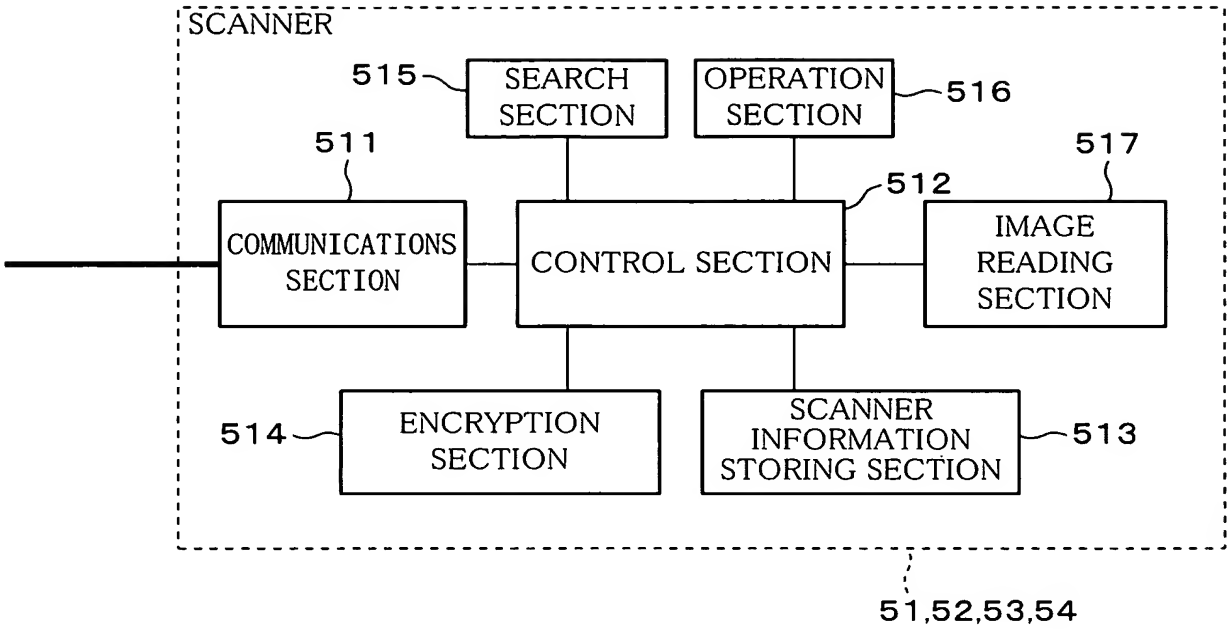

SCANNER
515
SEARCH SECTION
OPERATION SECTION
516
511
517
512
COMMUNICATIONS SECTION
CONTROL SECTION
IMAGE READING SECTION
514
ENCRYPTION SECTION
SCANNER INFORMATION STORING SECTION
513
51,52,53,54

FIG. 16 (a) STORAGE INFORMATION STORING SECTION

STORAGE NAME	STORAGE FEE	DATA PROTECTION FUNCTION (LEVEL)	
STORAGE SA	200 YEN	ONLY ENCRYPTION PROTOCOL 2.0 ENCRYPTION STORAGE	HIGH (TOP SECRET)
STORAGE SB	100 YEN	ONLY ENCRYPTION PROTOCOL 1.0	MEDIUM
STORAGE SC	FREE	—	LOW

FIG. 16 (b) SCANNER INFORMATION STORING SECTION

SCANNER NAME	DATA PROTECTION FUNCTION (LEVEL)		LOCATION	SCANNER FUNCTION
SCANNER ScA	ENCRYPTION PROTOCOL 2.0 ENCRYPTION PROTOCOL 1.0 DATA ENCRYPTION	TOP SECRET	CONVENIENCE STORE A	COLOR PRINTING: 2400dpi
SCANNER ScB	ENCRYPTION PROTOCOL 2.0 ENCRYPTION PROTOCOL 1.0	HIGH	CONVENIENCE STORE B	COLOR PRINTING: 2400dpi
SCANNER ScC	ENCRYPTION PROTOCOL 1.0	MEDIUM	CONVENIENCE STORE C	COLOR PRINTING: 1200dpi
SCANNER ScD	—	LOW	CONVENIENCE STORE D	BLACK-AND-WHITE PRINTING: 600dpi

FIG. 16 (c) HOST INFORMATION STORING SECTION

HOST NAME	DATA PROTECTION FUNCTION	DATA ENCRYPTION/DECRYPTION FUNCTION
HOST HA	ENCRYPTION PROTOCOL 2.0 ENCRYPTION PROTOCOL 1.0	PRESENT
HOST HB	ENCRYPTION PROTOCOL 2.0 ENCRYPTION PROTOCOL 1.0	ABSENT
HOST HC	ENCRYPTION PROTOCOL 1.0	PRESENT
HOST HD	—	ABSENT

FIG. 16 (d) DEVICE INFORMATION STORING SECTION

ROUTE	ENCRYPTION PROTOCOL	DATA ENCRYPTION	SECURITY LEVEL
ScA→SA→HA	2.0	PRESENT	TOP SECRET
ScA、ScB→SA→HA、HB	2.0	ABSENT	HIGH
ScA→SB→HA、HC	1.0	PRESENT	
ScA、ScB、ScC →SB →HA、HB、HC	1.0	ABSENT	MEDIUM
ScA→SC→HA、HC	ABSENT	PRESENT	
ScA、ScB、ScC、ScD →SC →HA、HB、HC、HA	ABSENT	ABSENT	LOW

FIG. 17 (a) SECURITY LEVEL:TOP SECRET

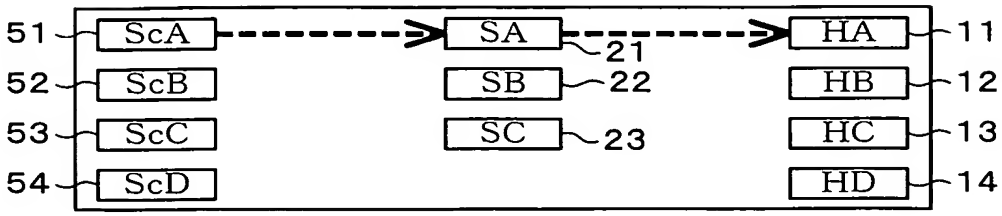


FIG. 17 (b) SECURITY LEVEL:HIGH-1

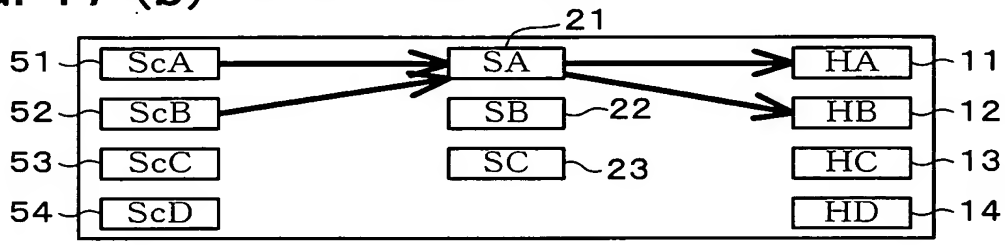


FIG. 17 (c) SECURITY LEVEL:HIGH-2

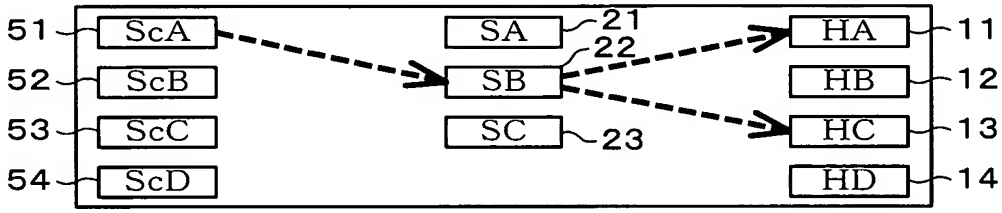


FIG. 17 (d) SECURITY LEVEL:MEDIUM-1

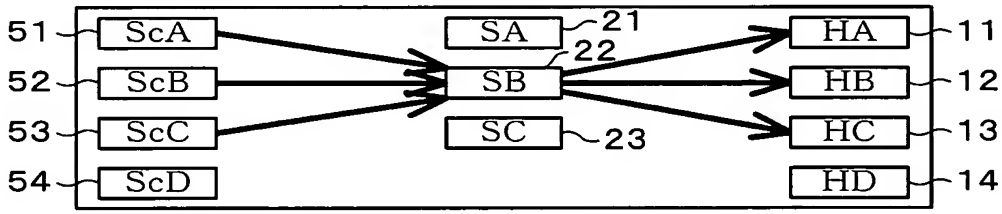


FIG. 17 (e) SECURITY LEVEL:MEDIUM-2

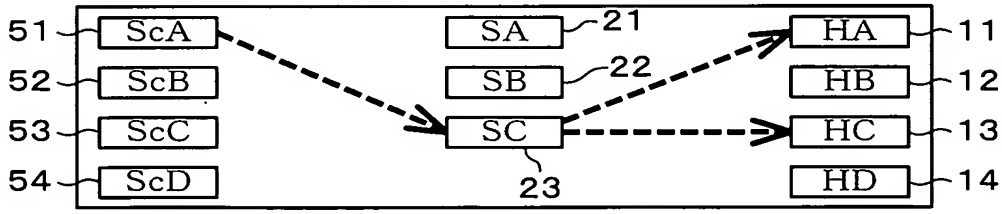


FIG. 17 (f) SECURITY LEVEL:LOW

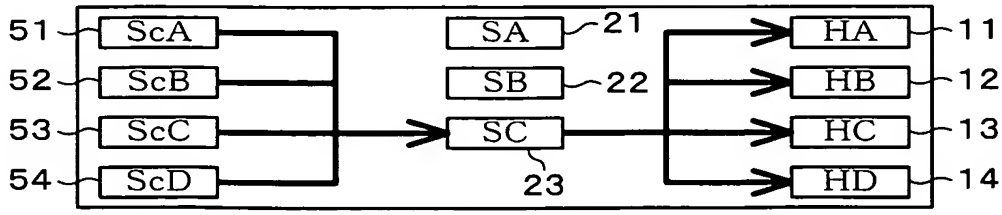
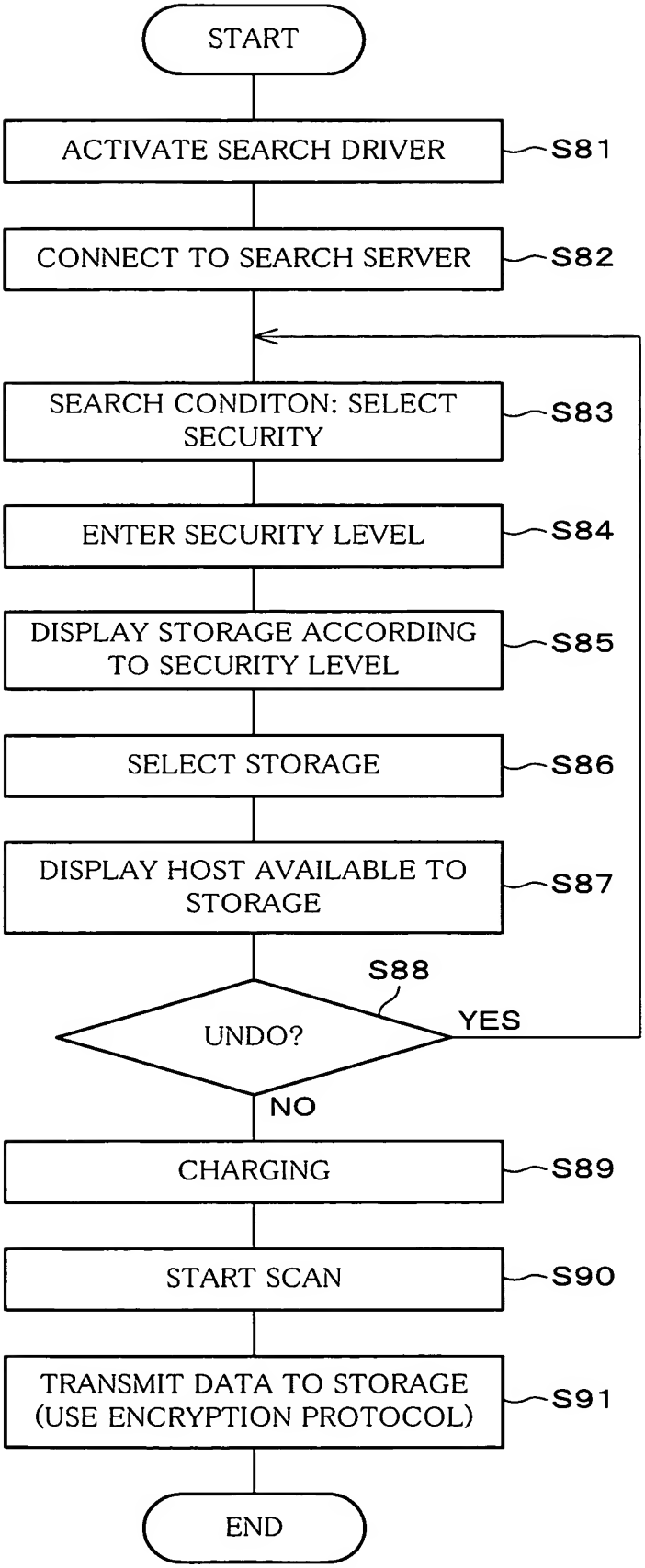


FIG. 18


START
ACTIVATE SEARCH DRIVER
S81
CONNECT TO SEARCH SERVER
S82
SEARCH CONDITON: SELECT SECURITY
S83
ENTER SECURITY LEVEL
S84
DISPLAY STORAGE ACCORDING TO SECURITY LEVEL
S85
SELECT STORAGE
S86
DISPLAY HOST AVAILABLE TO STORAGE
S87
S88
UNDO?
YES
NO
CHARGING
S89
START SCAN
S90
TRANSMIT DATA TO STORAGE (USE ENCRYPTION PROTOCOL)
S91
END